REMARKS/ARGUMENTS

Review and reconsideration on the merits are requested. A 37 C.F.R. § 1.132 declaration of Ms. Holly Garich accompanies this paper. The declaration includes data from additional tests to show the criticality of the claimed porous cloth in the anode chamber.

Claims 1-11, 13-31, 33-35 and 38-48 are pending in this application. Claims 1-11, 13-20 and 41-43 have been withdrawn from consideration. Claims 12, 32, and 36-37 have been canceled previously.

The Office has rejected claims 21-31, 33-35, 38-40, and 47 under 35 U.S.C. § 103(a) as being unpatentable over van Kempen et al. (6,818,115) in view of the admitted prior art and Botts et al. (5,776,327) and further in view of Gagnon et al. (5,616,246). Claims 44-46 and 48 are rejected under 35 U.S.C. § 103(a) as being unpatentable over van Kempen et al. in view of the admitted prior art and Botts et al. and further in view of Gagnon et al. and additionally in view of Wilson et al. (2005/0178667). Applicants traverse these rejections below.

Independent claim 21, as previously amended, is drawn to a method for electrodepositing a metal on a workpiece in which the plating cell includes the workpiece (102), as a cathode, and an anode chamber (126) that includes at least one anode (112) and a porous anode cloth (128). That anode cloth is oriented in planar parallel relation to the major surface of the workpiece (102) and defines a laminar channel between the workpiece and the anode chamber. Using this cell, the method includes the steps of passing electrolyte solution from an eductor (116) over the flow-directing surface of a solution flow dampening member (136) to produce a solution flow that is uniform and parallel to the major surface of the workpiece (102) and is also parallel to the major surface of the anode chamber (126) and the anode cloth (128). In combination, the major surface of the workpiece and the major surface of the cloth in the anode chamber function to define a channel that maintains a uniform laminar flow across the surface of the workpiece.

The Office action admits that the van Kempen reference does not teach a plating cell that includes an anode chamber including a porous cloth oriented in a planar parallel relationship to the major surface of the workpiece, but cites to Gagnon et al.'s teachings of an anode bag in

reference to the claimed porous cloth. OA, pg. 4, ¶ 7. The Office action states that it would have been obvious to provide an anode bag as taught by Gagnon et al. in the van Kempen et al. process "because any debris from the anode would have been contained by the bag and prevented from marring the surface of the electroplated workpieces." OA, pg. 5, ¶ 8.

Applicants note that the invention is directed to an entirely different problem than the problem addressed by the use of an anode sock. In accordance with the invention a planar parallel porous cloth provides a "virtual" anode "plate" that has a distinctly different function than that of a conventional anode bag. The porous anode cloth forms a planar channel through which the electrolyte flows. See Declaration of Holly Garich, pg. 2. This planar channel is apparent from the figure attached to Ms. Garich's declaration, which illustrates an anode chamber that includes a porous cloth (128) and a plurality of anode bags or "socks" (115) similar to the one used in the additional tests reported in the declaration. This planar channel provides a more uniform laminar flow that improves the quality of the electrolytic coating formed on the workpiece.

Regarding the citation of Botts et al., the applicants note that Botts et al. does not teach an anode box having a planar parallel porous anode cloth and, as such, the combination of Botts et al., Gagnon et al., and the van Kempen reference does not yield the invention.

In accordance with the claimed subject matter, as noted above, the porous anode cloth runs in a parallel planar relationship to the workpiece and thereby creates a planar channel through which the electrolyte flows. In this manner, the applicants are able to establish a very uniform laminar flow and produce a more uniform plated surface than can be produced when an anode chamber not having the planar parallel porous cloth is used. This planar parallel porous cloth is critical to producing the more uniform plated surface of the workpiece as demonstrated by the increase in the coefficient of variability (CoV) when the porous cloth is not present in the anode chamber. This is shown in Table 2 at paragraph [0105] of the published application. Table 2 provides the coefficient of variability (CoV) across the workpiece. When plating without an anode chamber in the cell (Test 5E), the CoV is 14.8. When the anode chamber is present, but without the parallel porous cloth (Test 5F) the CoV is 11.61, and when the chamber

includes the porous cloth (Test 5D) the CoV drops to 7.72. Accordingly, the results in Table 2 show that by constructing a cell in which the electrolyte solution flow is directed across the face of the workpiece using an anode box including a planar parallel porous anode cloth, a low coefficient of variability is achieved.

To demonstrate further the criticality of the porous cloth, in the accompanying declaration, Ms. Holly Garich reports the results of additional tests with and without the planar parallel porous cloth present in an anode chamber. The tests were conducted at the same conditions as Test 5DH in the pending application and show that the porous cloth, in fact, significantly improves the coefficient of variability for an electroplating cell. Test 5DH – II included an anode chamber having 191 mm shielding without a porous cloth. The CoV without the porous cloth was 9.2 % for the back and 10.1% for the front of the workpiece. Test 5DH – IV utilized the same anode chamber, but with a porous cloth. The CoV with the porous cloth decreased significantly to 5.3% for the back and 7.5% for the front of the workpiece. This demonstrates improved uniformity of metal distribution over the workpiece when the porous cloth is present.

In view of the foregoing, the applicants submit that the rejections set forth in the Official Action of April 2, 2008 should be withdrawn.

In the event the Examiner wishes to discuss any aspect of this response, he is invited to contact the undersigned at the telephone number indicated below.

The Commissioner is hereby authorized to charge any additional fees required, including the fee for an extension of time, or to credit any overpayment to Deposit Account 20-0809. The applicants hereby authorize the Commissioner under 37 C.F.R. §1.136(a)(3) to treat any paper that is filed in this application which requires an extension of time as incorporating a request for such an extension.

Respectfully submitted,

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